

REMARKS

Claim status

Claims 1-15 were pending in the case at the time of the current Office Action. No claim amendments have been made herein. Claims 1-15 are currently pending in the application.

Section 102 rejections

In the current Office action, claims 1, 2-8, 10-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Esteller et al. (U.S. Patent 6,594,524).

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

Independent claim 1 recites an apparatus for the classification of physiological events on the basis of physiological signals, said apparatus comprising:

a probabilistic neural network which is adapted to receive a set of values representing the physiological signal and which contains a number of event classes which represent physiological events and which are respectively determined by a number of comparative values, which network is adapted on the basis of the comparison of the set of values with the comparative values to implement an association of the physiological signal represented by the set of values with one of the event classes; and

an updating unit connected to the probabilistic neural network for updating the comparative values of an event class on the basis of the set of values of at least one physiological signal which has been associated with said event class in a preceding association operation.

Independent claim 8 recites an implantable medical device, comprising:

an apparatus for the classification of physiological events on the basis of physiological signals comprising:

a probabilistic neural network which is adapted to receive a set of values representing the physiological signal and which contains a number of event classes which represent physiological events and which are respectively determined by a number of comparative values, which network is adapted on the basis of the comparison of the set of values with the comparative values to implement an association of the physiological signal represented by the set of values with one of the event classes; and

an updating unit connected to the probabilistic neural network for updating the comparative values of an event class on the basis of the set of values of at least one physiological signal which has been associated with said event class in a preceding association operation.

It is respectfully submitted that Esteller et al. (U.S. Pat. No. 6,594,524), hereinafter Esteller, does not teach or suggest the inventions of independent claims 1 and 8. In particular, Esteller at least does not teach or suggest an updating unit connected to the probabilistic neural network for updating the comparative values. It is true that Esteller discloses a probabilistic neural network as one possible embodiment of the system of Esteller. However, there is only a very superficial disclosure of this embodiment beginning in column 36, line 41 of Esteller. There is no teaching or suggestion in the disclosure of the probabilistic neural network, in column 36, line 41 to column 37, line 56 of Esteller, to updating the feature vectors by modifying reference vector coefficients (i.e., the comparative values) based on actual sensed events (i.e., set of values) during normal operation of the probabilistic neural network, as in the claimed invention.

The disclosure of the probabilistic neural network in Esteller lacks any teaching or suggestion to an updating unit and, even more, lacks any teaching or suggestion to “updating the comparative values of an event class on the basis of the set of values of at least one physiological signal which has been associated with said event class in a preceding association operation.”

In the current Office action, the Examiner refers to column 11, lines 20-25 of Esteller as describing an updating unit. However, column 11, lines 20-25 of Esteller does not describe an updating unit connected to the probabilistic neural network for updating the comparative values

of an event class on the basis of the set of values of at least one physiological signal which has been associated with said event class in a preceding association operation. Instead, this section of Esteller describes a settings adjustment unit 570 that is used for programming of the different options of the apparatus of Esteller via a keypad to establish supervisory control actions. The adjustment unit 570 of Esteller has nothing to do with the probabilistic neural network of Esteller and has nothing to do with updating reference vector coefficients (i.e., the comparative values) based on actual sensed events.

Further, dependent claim 2 and other dependent claims of the present invention define how the comparative values are updated, for example, by averaging and by exponential weighting. The “average power or moving average power” of Esteller is not described as being used to update the nodes of a probabilistic neural network. Also, the “average nonlinear energy or moving average nonlinear energy” of Esteller is not described as being used to update the nodes of a probabilistic neural network.

Also, dependent claim 4 and other dependent claims of the present invention define how updating of an event class is effected after the association of a n-th value set with the event class. The “thresholded nonlinear energy” of Esteller is not described as being used to update an event class after association of a n-th value set.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claims 1 and 8 are not anticipated by Esteller, and it is respectfully submitted that independent claims 1 and 8 define allowable subject matter. Also, since claims 2-7 and 10-15 depend either directly or indirectly from claims 1 and 8, it is respectfully submitted that claims 2-7 and 10-15 define allowable subject matter as well. Applicants respectfully request that the rejection of claims 1, 2-8, and 10-15 under 35 U.S.C. 102(e) be removed.

Section 103 rejections

In the current Office action, claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Esteller in view of Gray et al. (U.S. Patent 6,144,879), hereinafter, Gray.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

As described above, independent claim 8 is not anticipated by Esteller. Therefore, it is respectfully submitted that the combination of Esteller and Gray does not make obvious the invention of dependent claim 9, which depends directly from independent claim 8. Applicants respectfully request that the rejection of claim 9 under 35 U.S.C. 103(a) be removed.

Accordingly, the applicant respectfully requests reconsideration of the rejections based on at least the foregoing. After such reconsideration, it is urged that allowance of claims 1-15 will be in order.

Respectfully submitted,



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